

ATTACHMENT 12

WASTE FEED CUTOFF SYSTEMS TESTING PROCEDURE

Attachment 12
Waste Feed Cutoff Systems Testing Procedure

The testing of the automatic waste feed cutoff system will be done on a weekly basis (once every 168 hours on waste). The test initiation will shut off waste feed (effects) as each "cause" is electronically checked.

1. The control board operator is responsible to initiate the weekly waste feed cutoff test.

Once the test is started, a total waste feed cutoff is initiated by a simulated "cause." The "effects" of this condition will be field verified and recorded on forms. Once this occurs the control system will simulate signals internally for each of the waste feed cutoff causes and generate an alarm printout to indicate that each one operated.

2. The control system is programmed such that one coil (programming loop) will cause all the associated effects. Also, all of the associated waste feed causes will energize the one coil.

The waste feed cutoff test is conducted in two parts. The first part consists of testing that the one coil causes all the associated "effects" which are field verified and initialed by the operator performing the verification. The second part tests that all of the associated "causes" energize the one coil. In doing this, it is inferred that any of the "causes" will cause the "effects."

3. The following cutoffs (effects) will occur:

a) Apron Feeder	SV 1036	on/off
Upper Flop Gate	SV 1035B	open/shut
Lower Flop Gate	SV 1034B	open/shut
b) Kiln Elevator Container		
Feed Gate	SV 1033B	open/shut
c) Direct Burn (A-101)		
Block Valve	SV 1170	open/closed
Control Valve	FV 1171	open/closed
d) Kiln Liquid Waste Feed (A-104A)		
Block Valve	SV 1120	open/closed
Control Valve	FV 1121	open/closed
e) North ABC Liquid Waste Feed (A-106A)		
Block Valve	SV 1183	open/closed

- | | | |
|---------------|---------|-------------|
| Control Valve | FV 1184 | open/closed |
|---------------|---------|-------------|
- f) South ABC Cylinder Waste Feed
- | | | |
|---------------|---------|-------------|
| Block Valve | SV 1103 | open/closed |
| Control Valve | SV 1104 | open/closed |
- g) North ABC Aqueous Waste Feed (A-105A)
- | | | |
|-----------------------|---------|-------------|
| Aqueous Block Valve | SV 1252 | open/closed |
| Aqueous Control Valve | FV 1253 | open/closed |
- h) South ABC Liquid Waste Feed (A-106B)
- | | | |
|---------------|---------|-------------|
| Block Valve | SV 1220 | open/closed |
| Control Valve | FV 1221 | open/closed |
- i) South ABC Aqueous Waste Feed (A-105B)
- | | | |
|-----------------------|---------|-------------|
| Aqueous Block Valve | SV 1262 | open/closed |
| Aqueous Control Valve | FV 1263 | open/closed |
- j) Kiln Sludge Feed (A-103)
- | | | |
|---------------------------|---------|-------------|
| Kiln Sludge Control Valve | PV 4021 | open/closed |
| Kiln Sludge Block Valve | SV 4022 | open/closed |
- k) Kiln Aqueous Waste Feed (A-102)
- | | | |
|-----------------------|---------|-------------|
| Aqueous Block Valve | SV 1150 | open/closed |
| Aqueous Control Valve | FV 1151 | open/closed |
- l) Drum Pumping Station
- | | | |
|-------------|--------|-------------|
| Block Valve | SV3016 | open/closed |
|-------------|--------|-------------|
4. When the waste feed cutoff test is initiated, waste feed ceases. The liquid burners are put on clean fuel to maintain temperature. A field check verifies that the effect occurred. This is done by a person who will physically check that the cutoff occurred and record the results on the form at the end of this attachment.
5. Once the waste feed ceases, the following list of waste feed cutoff causes will be simulated internally in the control system. Alarms will be recorded to verify operation (signal sent, signal received). The following causes will be simulated:

TOTAL WASTE FEED CUTOFF CAUSES (1)

- a) ABC low temperature, TALL-1009
< 2018°F, HRA

- b) ABC high pressure, PAH-1006
≥ 0.0" H₂O, 5 sec
- c) ABC low oxygen
 < 3%, 2 min, AAL-1010
 < 2%, 15 sec, AALL-1010
- d) Spray dryer high exit temperature
 > 400°F, HRA, TAH-2001R
 > 520°F, TAH-2001
- e) Spray dryer low exit temperature
 < 350°F, 15 minutes, TAL-2001
 < 250°F, TALL-2001
- f) Spray dryer upper nozzle low brine pressure, PAL-2044
 < 300 psi
- g) Spray dryer lower nozzle low brine pressure, PAL-2045
 < 300 psi
- h) Baghouse low differential pressure, PDAL 2020
 < 1.8" H₂O
- i) Baghouse minimum compartments on-line, ZAL2020
 <7 compartments
- j) Baghouse high broken bag detector, AAH2020B
 >50% of the instrument span
- k) Saturator high exit temperature, TAHH-2082
 > 225°F
- l) Saturator low brine flow, FALL-2081
 < 300 gpm, HRA
- m) 1st stage scrubber feed low pH, AAL-2104
 < 5.47, HRA
- n) 1st stage scrubber low brine flow, FALL-2092
 < 1960 gpm, HRA
- o) 1st stage scrubber low pressure drop, PAL-2093A
 < 0.5" H₂O, HRA

- p) 2nd stage scrubber feed low pH, AAL-2130
< 6.23, HRA
- q) 2nd stage scrubber rundown low pH, AAL-2129
< 5.8, HRA
- r) 2nd stage scrubber low brine flow, FALL-2095
< 2140 gpm, HRA
- s) 2nd stage scrubber low pressure drop, PAL-2093B
< 0.5" H₂O HRA
- t) Activated carbon feed rate WT-2037RL
< 25 lb/hr, HRA
- u) Stack gas high flow, FAH-2195
> 77,800 ACFM, HRA
- v) Stack high CO
> 100 ppm, HRA, AHH-2199
> 500 ppm for more than 60 sec, AAH-2199
- w) ABC burners BMS trip, A106AM and A106BM,
both simultaneously
- x) Emergency waste feed stop red button, PB-0004
- y) WDPF waste feed cutoff, PB-0005
- z) Loss of utility power, UA-0001
- aa) ABC safety vent open, ZAO-1017
- bb) Baghouse on bypass, ZAL-2021
- cc) Induced draft fan off, K-201

TOTAL KILN WASTE FEED CUTOFFS CAUSES (2)

- a) Kiln outlet temperature, TAL 1005
< 1820°F, HRA (two pyrometers on-line)
< 1940°F, HRA (one pyrometer on-line)

- b) Low kiln rotation, SAL-1003
 < .15 RPM
- c) Kiln Burner Management System, A104M
 - Loss of Flame
 - Low Combustion Air Pressure
 - Low Differential Pressure (atomizing air to waste liquid or fuel) on all enabled fuels (fuel oil or waste liquid)
 - Low Liquid Pressure on all enabled fuels (fuel oil or waste liquid)
 - Disabling all fuels (fuel oil or waste liquid)
 - Manual shutdown of BMS

KILN CONTAINERS, SOLIDS, AND SLUDGE CUTOFF CAUSES (3)

- a) Kiln low secondary combustion air pressure, PAL-1018
 < 2" H₂O

COMBINED BULK SOLIDS AND CONTAINERS WASTE FEED CUTOFF CAUSES (4)

- a) Bulk Solids and Kiln Barrel Feed
 - High hourly combined container and bulk solids feed rate, WQAH-1040, >18,600 lb/hr, HRA

WASTE FEED CUTOFF TO THE AFFECTED GUN/LANCE/FEED MECHANISM CAUSES (5)

- a) Kiln Blend Liquid Lance (A-104)
 - Kiln blend liquid low pressure switch PSL-1119A
 - Kiln atomizing air/waste liquid differential low pressure switch, PDSL-1124
 - High Kiln blend liquid flow rate, FAH-1121, >3090 lb/hr, HRA or >90 lb/min for 15 sec
 - Low Kiln blend liquid flow rate (turndown), <1.125 gpm for 15 sec (except during 3 minute gun startup)
- b) Direct Burn Lance (A-101)
 - Direct burn atomizing air low pressure switch PSL-1162
 - High hourly direct burn feed rate, FQAH-1171, >1710 lb/hr, HRA
- c) Sludge Feed (A-103)

High hourly sludge feed rate, FQAH-4042, >2170 lb/hr, HRA or >200 lb/min for 15 sec

- d) North ABC Blend Liquid Lance (A-106A)
 - North ABC blend liquid low pressure switch PSL-1119B
 - North ABC atomizing air/waste liquid differential low pressure switch, PDSL-1187
 - Low North ABC blend liquid flow rate (turndown), <1.125 gpm for 15 sec (except during 3 minute gun startup)
 - High North ABC blend liquid flow rate, FAH-1184D, >90 lb/min for 15 sec
- e) South ABC Blend Liquid Lance (A-106B)
 - South ABC blend liquid low pressure switch PSL-1196
 - South ABC atomizing air/waste liquid differential low pressure switch, PDSL-1224
 - Low South ABC blend liquid flow rate (turndown), <1.125 gpm for 15 sec (except during 3 minute gun startup)
 - High South ABC blend liquid/gas flow rate, FAH-1221D, >90 lb/min for 15 sec
- f) South ABC Cylinder Lance
 - South ABC cylinder eductor nitrogen low pressure switch, PSL-1107
- g) North ABC Aqueous Lance (A-105A)
 - North ABC aqueous low pressure switch, PSL-1165B
 - North ABC aqueous atomizing air low pressure switch, PSL-1256
 - High North ABC aqueous flow rate, FAH-1253D, >60 lb/min for 15 sec
- h) South ABC Aqueous Lance (A-105B)
 - South ABC aqueous low pressure switch, PSL-1165C
 - South ABC aqueous atomizing air low pressure switch, PSL-1266
 - High South ABC aqueous flow rate, FAH-1263D, >60 lb/min for 15 sec
- i) North ABC Burner Management System, A106AM
 - Loss of Flame
 - Low Combustion Air Pressure
 - Low Differential Pressure (atomizing air to waste liquid or fuel) on all enabled fuels (fuel oil or waste liquid)
 - Low Liquid Pressure on all enabled fuels (fuel oil or waste liquid)
 - Disabling all fuels (fuel oil or waste liquid)
 - Manual shutdown of BMS
- j) South ABC Burner Management System, A106BM
 - Loss of Flame
 - Low Combustion Air Pressure

Low Differential Pressure (atomizing air to waste liquid or fuel) on all enabled fuels (fuel oil or waste liquid)
Low Liquid Pressure on all enabled fuels (fuel oil or waste liquid)
Disabling all fuels (fuel oil or waste liquid)
Manual shutdown of BMS

k) Kiln Aqueous Lance (A-102)

Kiln aqueous low pressure switch, PSL-1157A

Kiln aqueous atomizing air low pressure switch, PSL-1156A

High Kiln aqueous flow rate, FAH-1151, >1350 lb/hr, HRA or > 60 lb/min for 15 sec

COMBINED A-106A AND A-106B WASTE FEED CUTOFF CAUSES (6)

a) North and South ABC Blend Liquid Guns (A-106A and B) and South ABC Cylinder Feed

High combined North and South ABC blend liquid/gas flow rate, FAH-1290, >3720 lb/hr, HRA

COMBINED A-105A AND A-105B WASTE FEED CUTOFF CAUSES (7)

a) North and South ABC Aqueous Lances (A-105A and B)

High combined North and South ABC aqueous flow rate, FAH-1270, >6440 lb/hr, HRA

6. The six signals (loss of flame, low combustion air pressure, low atomizing air pressure, low waste liquid pressure, disabling all fuels, and manual shutdown of the BMS) which will cause the Burner Management System on each burner to shut down, causing a waste feed cutoff, are not tested during the weekly waste feed cutoff test. These signals shall be tested periodically in the field at a frequency at least that recommended by the manufacturer. However, the minimum frequency shall be at least quarterly. Documentation of these tests shall be maintained in the facility's operating record.
7. Some causes in section 5 do not create all the effects in section 3. The list of causes with their limited effects follows.

<u>Cause</u>	<u>Effect</u>
1) total waste feed cutoff causes	All effects occur
2) total kiln waste feed cutoff causes	3a, 3b, 3c, 3d, 3j, 3k, 3l

- | | | |
|----|---|---------------------------------------|
| 3) | kiln containers, solids, and sludge waste feed cutoff causes | 3a, 3b, 3j, 3l |
| 4) | combined bulk solids and containers waste feed cutoff causes | 3a, 3b |
| 5) | waste feed cutoff to the affected gun/lance/feed mechanism causes | Affected individual waste stream only |
| 6) | combined A-106A and A-106B waste feed cutoff causes | 3e, 3f, 3h |
| 7) | combined A-105A and A-105B waste feed cutoff causes | 3g, 3i |
8. Waste feed not operating at the time of the test will not be tested. That is, if the direct burn system is not in use, it will not be set up just for the test. Clean Harbors Aragonite will verify all valves are still shut.

Waste Feed Cutoff Test

Date: _____

Time: _____

EQUIPMENT	TAG#	STATUS	INITIALS
Bulk Solids:			
Apron Feeder	SV-1036		
Upper Flop Gate	SV-1035B		
Lower Flop Gate	SV-1034B		
Kiln Elevator:			
Slide Gate	SV-1033B		
Direct Burn:			
Block Valve	SV-1170		
Control Valve	FV-1171		
Kiln Liquid Waste Feed:			
Blended Waste Block Valve	SV-1120		
Blended Waste Control Valve	FV-1121		
North ABC Liquid Waste Feed:			
Blended Waste Block Valve	SV-1183		
Blended Waste Control Valve	FV-1184		
Aqueous Block Valve	SV-1252		
Aqueous Control Valve	FV-1253		
South ABC Liquid Waste Feed:			
Blended Waste Block Valve	SV-1220		
Blended Waste Control Valve	FV-1221		
Aqueous Block Valve	SV-1262		
Aqueous Control Valve	FV-1263		
Cylinder Block Valve	SV-1103		
Cylinder Control Valve	SV-1104		
Kiln Sludge Feed:			
Sludge Control Valve	PV-4021		
Sludge Block Valve	SV-4022		
Drum Pumping Station:			
Drum Pumping Station Block Valve	SV-3016		
Kiln Aqueous Feed:			
Aqueous Block Valve	SV-1150		
Aqueous Control Valve	FV-1151		

